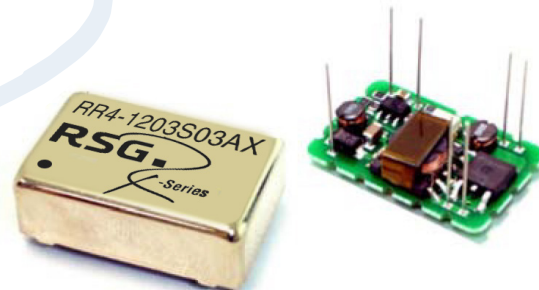


RR4-S03/D03

- 24 Pin DIL Package
- Wide 2:1 Input Range
- 1500VDC Isolation
- Up to 3500VDC Isolation
- Continuous Short Circuit Protection
- Efficiency up to 82%
- Operating Temperature Range
-40° ~ +85°C
- Metal Case Standard , Optional Plastic Case

RoHS



OUTPUT SPECIFICATION	
Voltage accuracy:	±1%
Line regulation:	Single & Dual ±0.5% max.
LOAD REGULATION:	±0.5%
	Output 3.3V Model: ±1.5%
Short Circuit Protection :	Indefinite (Automatic Recovery)
Ripple noise (20Mhz bandwidth):	60mV pk-pk
Temperature coefficient:	±0.02% °C
Capacitor load:	See table
INPUT SPECIFICATIONS	
Voltage Range:	See table
Max. Input Current:	See table
No-Load/Full-Load Input Current:	See table
Input Filter:	PI Type
Input Reflected Ripple Current :	35mA pk-pk
GENERAL SPECIFICATIONS	
Efficiency:	See table typ.
I/O Isolation Voltage Metal Case (3 sec.):	1000VDC
I/O Isolation Voltage (3 sec.):	1000 ~ 3500VDC
I/O Isolation Capacitance:	500pF typ.
I/O Isolation Resistance:	1500M Ohm
Switching Frequency:	266kHz, typ.
Humidity:	95% rel H
Reliability Calculated MTBF :	> 1.21Mhrs (MIL-HDBK-217 f)
Safety Standard: (designed to meet):	IEC 60950-1

ENVIRONMENTAL SPECIFICATION	
Operating Temperature range:	-40°C ~ +85°C (see Derating Curve)
Maximum Case Temperature:	100°C
Storage Temperature :	-40°C ~ +125°C
Cooling :	Nature Convection
PHYSICAL SPECIFICATIONS:	
Case Material:	Nickel-coated Copper
Base Material:	Non-conductive Black Plastic (UL94V-0 rated)
PIN Material:	Ø 0.5mm Brass Solder coated
Potting Material:	Epoxy (UL94V-0 rated)
Weight Case-DIP:	13.5g (plastic), 17.0g (Metal)
Dimmension DIP:	1.25" x 0.8" x 0.4"
ABSOLUTE MAXIMUM RATINGS (1)	
Input Surge Voltage (100ms)/	
12V Models:	24VDC max.
24V Models:	40VDC max.
48V Models:	80VDC max.
Soldering Temperature:	260°C max. (2)
EMC SPECIFICATIONS	
Radiated-/Conducted Emissions:	EN55022 Class A (see EMI Filter note)
ESD:	IEC 61000-4-2 Perf.Criteria A
RS:	IEC 61000-4-3 Perf.Criteria A
EFT:	IEC 61000-4-4 Perf.Criteria A
SURGE:	IEC 61000-4-5 Perf.Criteria A
CS:	IEC 61000-4-6 Perf.Criteria A
PFMF	IEC 61000-4-8 Perf.Criteria A

1) These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.

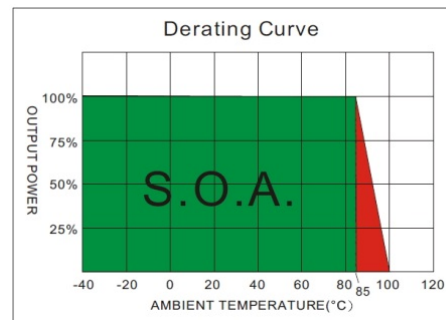
2) (1.5mm from case 10sec Max.)

3) All specifications typical at TA= 25°C, nominal input voltage and full load unless otherwise specified.

4) The information and specification contained in this data sheet are believed to be correct at time of publication. However RSG accepts no responsibility for consequences arising from printing errors or inaccuracies. Specifications are subject to change without notice.

NUMBER STRUCTURE

RR4	-	XX	XX	S/D	XX	A	X	X
Name/Package RR4=DIL24		Input 12= 9-18V 24=18-36V 48=36-72 V	Output 03=3.3V 05=5.0V 09=9.0V 12=12V 15=15V 24=24V	Type S= Single-Outp. D= Dual-Outp.	Power (W) 02=2.00 03=3.00 04=4.00 05=5.00 06=6.00	Code internal	Isolation (kVDC) 1= 1.5 3= 3.5	
P = Plastic Case Standard =Metal								



MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current		EFFICIENCY @FL(%)	Capacitor Load(μF)
		No-Load (mA)	Full Load (mA)		Min. load (mA)	Full load (mA)		
RR4-1203S03AX	9-18	22	343	3.3	0	900	72	470
RR4-1205S03AX	9-18	22	328	5	0	600	76	470
RR4-1209S03AX	9-18	22	320	9	0	333	78	68
RR4-1212S03AX	9-18	22	312	12	0	250	80	47
RR4-1215S03AX	9-18	22	312	15	0	200	80	47
RR4-1224S03AX	9-18	22	313	24	0	125	80	22
RR4-1203D03AX	9-18	22	343	±3.3	0	±450	72	±220
RR4-1205D03AX	9-18	22	328	±5	0	±300	76	±220
RR4-1209D03AX	9-18	22	312	±9	0	±167	80	±33
RR4-1212D03AX	9-18	22	312	±12	0	±125	80	±22
RR4-1215D03AX	9-18	22	312	±15	0	±100	80	±22
RR4-1224D03AX	9-18	22	313	±24	0	±63	80	±10
RR4-2403S03AX	18-36	12	171	3.3	0	900	72	470
RR4-2405S03AX	18-36	12	164	5	0	600	76	470
RR4-2409S03AX	18-36	12	160	9	0	333	78	68
RR4-2412S03AX	18-36	12	156	12	0	250	80	47
RR4-2415S03AX	18-36	12	152	15	0	200	82	47
RR4-2424S03AX	18-36	12	153	24	0	125	82	22
RR4-2403D03AX	18-36	12	171	±3.3	0	±450	72	±220
RR4-2405D03AX	18-36	12	160	±5	0	±300	78	±220
RR4-2409D03AX	18-36	12	156	±9	0	±167	80	±33
RR4-2412D03AX	18-36	12	152	±12	0	±125	82	±22
RR4-2415D03AX	18-36	12	152	±15	0	±100	82	±22
RR4-2424D03AX	18-36	12	153	±24	0	±63	82	±10
RR4-4803S03AX	36-72	8	86	3.3	0	900	72	470
RR4-4805S03AX	36-72	8	82	5	0	600	76	470
RR4-4809S03AX	36-72	8	80	9	0	333	78	68
RR4-4812S03AX	36-72	8	78	12	0	250	80	47
RR4-4815S03AX	36-72	8	78	15	0	200	80	47
RR4-4824S03AX	36-72	8	78	24	0	125	80	22
RR4-4803D03AX	36-72	8	86	±3.3	0	±450	72	±220
RR4-4805D03AX	36-72	8	82	±5	0	±300	76	±220
RR4-4809D03AX	36-72	8	80	±9	0	±167	78	±33
RR4-4812D03AX	36-72	8	78	±12	0	±125	80	±22
RR4-4815D03AX	36-72	8	78	±15	0	±100	80	±22
RR4-4824D03AX	36-72	8	78	±24	0	±63	80	±10

Suffix "3" means 3.5KVdc isolation
Suffix "P" means Plastic case instead of standard Metal Case

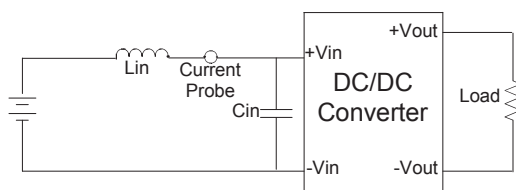
NOTE

1. Ripple/Noise measured with a 1uF ceramic capacitor.
2. Test by nominal input voltage and constant resistor load.
3. Measured Input reflected ripple current with a simulated source inductance of 12uH.
4. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.
5. Input filter components are be required to help meet conducted emission class A, which application refer to the EMI Filter of design & feature configuration.
6. An external filter capacitor is required if the module has to meet IEC 61000-4-4 and IEC 61000-4-5.
The filter capacitor RSG suggest: Nippon - chemi - con KY series, 220uF/100V.

TEST CONFIGURATIONS

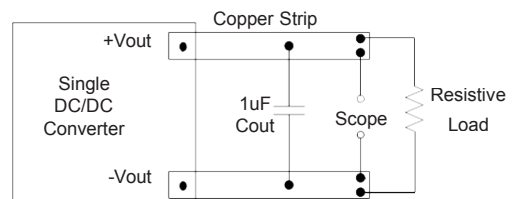
Input Reflected Ripple Current Test Step

Input reflected ripple current is measured through a source inductor L_{in} (12uH) and a source capacitor C_{in} (47uF, ESR<1.0Ω at 100KHz) at nominal input and full load.



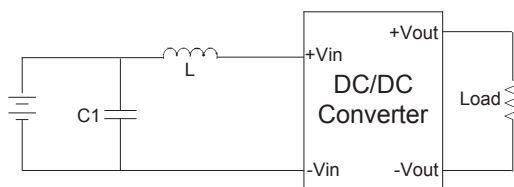
Output Ripple & Noise Measurement Test

Use a capacitor C_{out} (1.0uF) measurement.
The Scope measurement bandwidth is 0-20MHz.

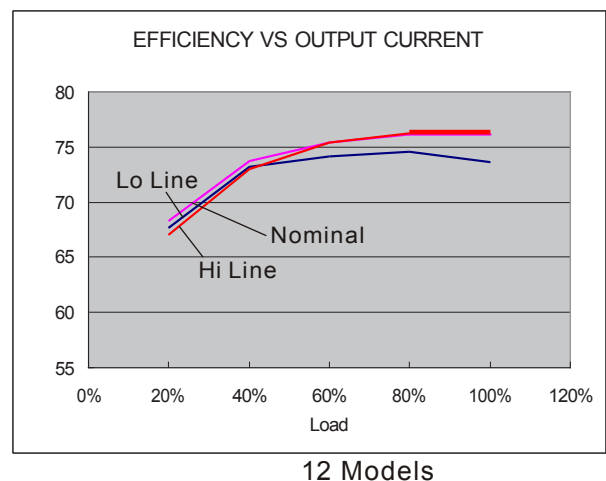


EMI Filter

Input filter components ($C1$, L) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.

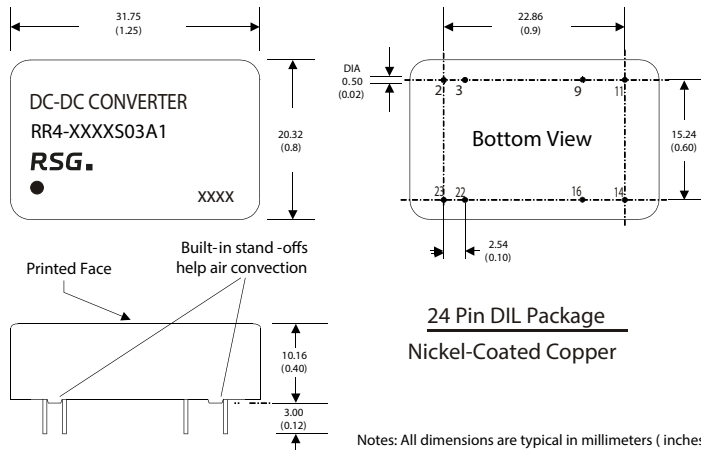


C1	L
100uF, 100V	12uH



RR4-S03/D03

MECHANICAL SPECIFICATIONS



24 Pin DIL Package
Nickel-Coated Copper

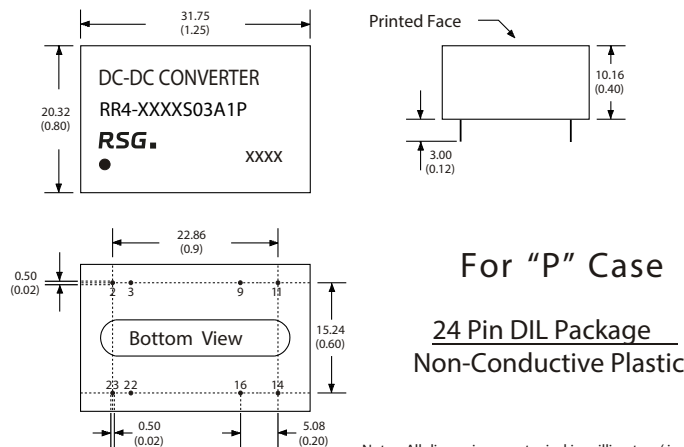
Notes: All dimensions are typical in millimeters (inches).
1. Pin diameter: 0.5 ± 0.05 (0.02 ± 0.002)
2. Pin pitch and length tolerance: ± 0.35 (± 0.014)
3. Case Tolerance: ± 0.5 (± 0.02)

PIN CONNECTIONS

PIN NUMBER	SINGLE	DUAL
2	-V Input	-V Input
3	-V Input	-V Input
9	N.P.	Common
11	N.C.	-V Output
14	+V Output	+V Output
16	-V Output	Common
22	+V Input	+V Input
23	+V Input	+V Input

(The Pin Connection of high isolation one is the same with normal one.)

MECHANICAL SPECIFICATIONS



For "P" Case
24 Pin DIL Package
Non-Conductive Plastic

Notes: All dimensions are typical in millimeters (inches).
1. Pin diameter: 0.5 ± 0.05 (0.02 ± 0.002)
2. Pin pitch and length tolerance: ± 0.35 (± 0.014)
3. Case Tolerance: ± 0.5 (± 0.02)

PIN CONNECTIONS

PIN NUMBER	SINGLE	DUAL
2	-V Input	-V Input
3	-V Input	-V Input
9	N.P.	Common
11	N.C.	-V Output
14	+V Output	+V Output
16	-V Output	Common
22	+V Input	+V Input
23	+V Input	+V Input

(The Pin Connection of high isolation one is the same with normal one.)

The models listed here are just standard type. If you need a product with special specification or you have questions regarding packing standards (Tube oder Tape/Reel) as well as application support, please contact our specialists: sales@rsg-electronic.de or +49 69-984047-41/-28